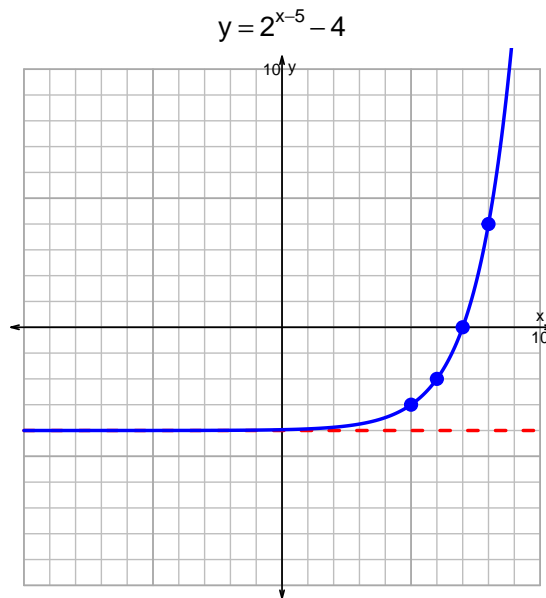
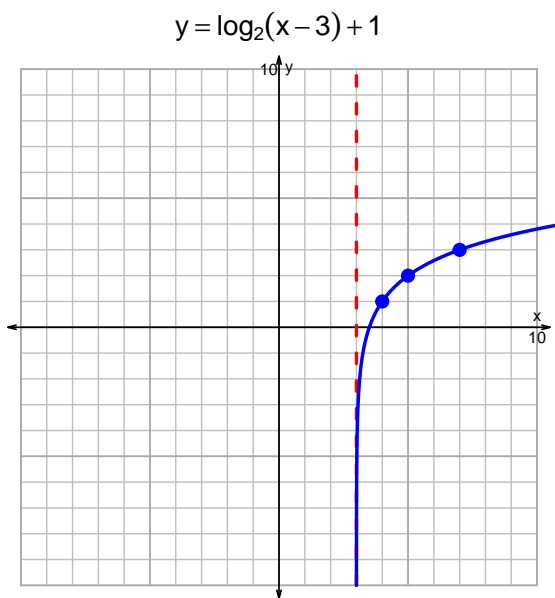


Name: _____

Date: _____

s18: EXP LOG (SLTN v304)

1. (10 pts) Graph $y = \log_2(x - 3) + 1$ and $y = 2^{x-5} - 4$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$29 = \left(\frac{5}{4}\right) \cdot 2^{-7t/3}$$

Divide both sides by $\frac{5}{4}$.

$$\frac{29 \cdot 4}{5} = 2^{-7t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{29 \cdot 4}{5}\right) = \frac{-7t}{3}$$

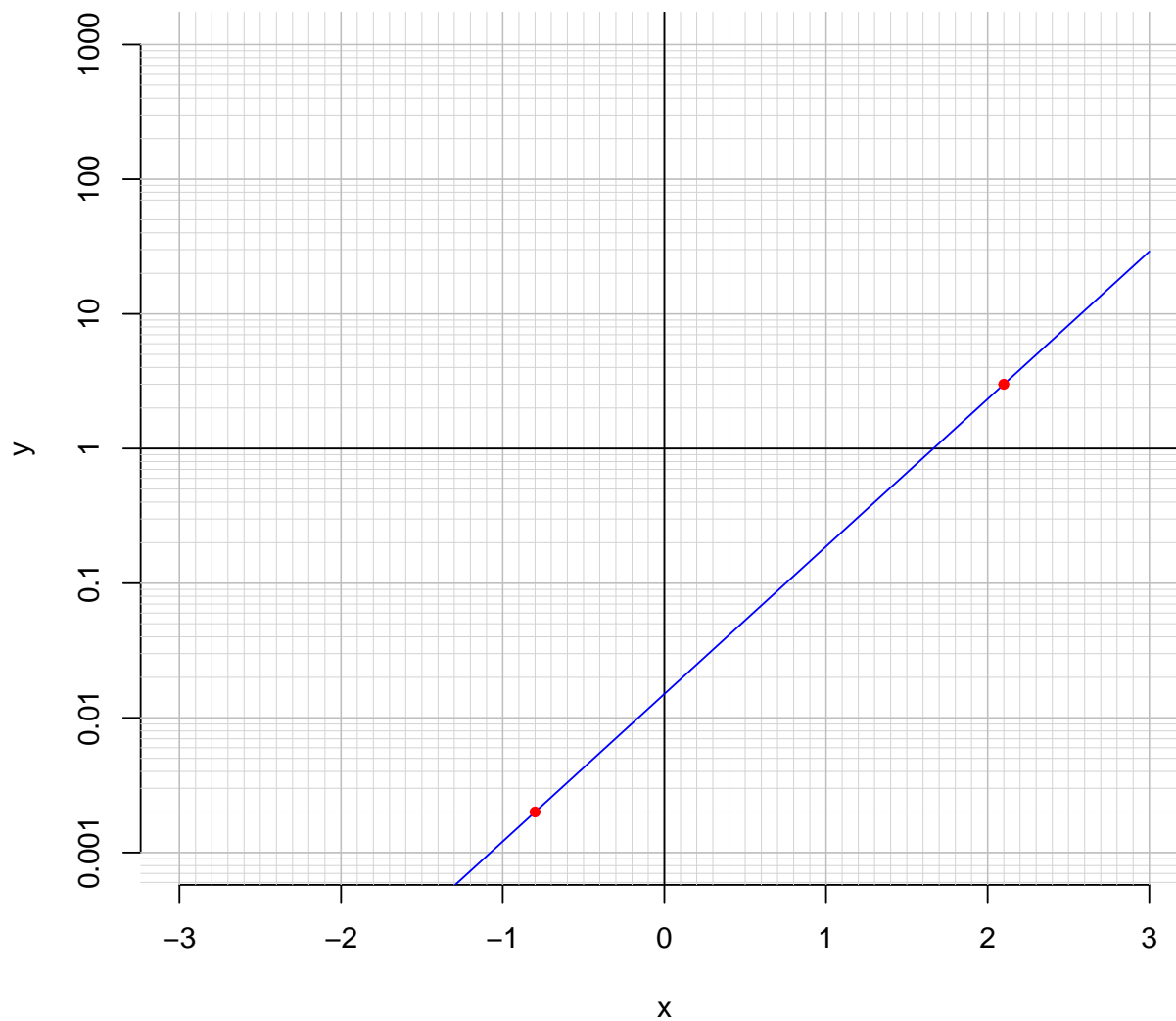
Divide both sides by $\frac{-7}{3}$.

$$\frac{-3}{7} \cdot \log_2\left(\frac{29 \cdot 4}{5}\right) = t$$

Switch sides.

$$t = \frac{-3}{7} \cdot \log_2\left(\frac{29 \cdot 4}{5}\right)$$

3. (10 pts) An exponential function $f(x) = 0.015 \cdot e^{2.52x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(2.1)$.

$$f(2.1) = 3$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{2.52} \cdot \ln\left(\frac{x}{0.015}\right)$$

Using the plot above, evaluate $f^{-1}(0.002)$.

$$f^{-1}(0.002) = -0.8$$